

WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY
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Note to Readers: Pages 1-14 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 15.

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Item 1. UN Establishes the International Panel for Sustainable Resource Management

The International Panel for Sustainable Resource Management (IPSRM) is a new international think tank established by UNEP to provide expert global assessments on the use, security, and environmental impact of global resources. Just as the Intergovernmental Panel on Climate Change (IPCC) founded in 1988 has evolved with the participation of 2,500 scientists from 60 countries to produce the state of knowledge of global climate change, so too could IPSRM do one day for the global knowledge of resource management. It will begin by providing a systemic and holistic framework for understanding resources from all phases of the resources' life cycles to help identify interlinkages, gaps, and opportunities for policy makers to take action. The Panel is supported by a Secretariat, hosted by the Sustainable Consumption and Production Branch of UNEP's Division of Technology, Industry and Economics, based in Paris. National participation in the panel has been expressed so far from Canada, China, Egypt, Finland, Germany, Hungary, Italy, Japan, Netherlands, Norway, Russia, South Africa, and Tanzania. NGOs such as the World Business Council on Sustainable Development and the International Council for Science (ICSU) have also asked to participate.

Military Implications:

Since environmental security would have to be considered within the broad framework of the IPSRM, it would be wise to begin to explore how those involved in the Army Strategy on the Environment and military personnel with natural resources management responsibilities should communicate with the new organization. Because the next US administration could well choose to become an important member in the IPSRM, there could be opportunities for military scientists to participate on the panel. In any case, the military and its contractors should follow the Panel's work.

Sources:

New Panel must boost resource-efficient growth and innovation, UN Environment Programme says
<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=521&ArticleID=5700&l=en>
International Panel for Sustainable Resource Management (Resource Panel)
<http://www.unep.fr/pc/sustain/initiatives/resourcepanel/>

Item 2. International Norms Led by IAEA Are Needed to Stop Smuggling of Nuclear Materials and Nuclear Proliferation

During a Security for a New Century briefing at the U.S. Capitol, November 27, 2007, David Albright, President of the Institute for Science and International Security said that A.Q. Khan's nuclear smuggling network may be just the tip of an iceberg, and national systems of enforcement are dangerously inadequate. He recommended that the International Atomic Energy Agency lead the creation of new international norms for everything from export controls for nuclear-related materials to a determination of what is classified information about nuclear energy. He also said that corporations should not do business with any trading company unless they can show that the end user could not contribute to nuclear proliferation. Financial loss due to discovery that their materials ended up in illegal nuclear programs will be higher than the financial loss from not selling the products.

In a related development, Edit Herczog, Member of the European Parliament, declared at NATO's November 23, 2007 Advanced Research Workshop held in Budapest on "Energy and Environmental Challenges to Security" that the EURATOM treaty may need a new focus on such security issues as non-proliferation and radiation protection. The EURATOM treaty has never been amended since its establishment 50 years ago. [See also *Nuclear Safety* in September 2007, *Increasing Nuclear Safety and Security* in March 2006 and other related items in previous environmental security reports.]

Military Implications:

The military should consider how to make its civilian contractors know the end user of their sales, and require that they should refuse to sell "when in doubt" and report all questionable requests. Relevant military should work with diplomats and IAEA personnel to identify enforcement mechanisms for new international norms to stop smuggling of nuclear-related materials. Amending the EURATOM treaty as suggested could present new opportunities for increasing US-European cooperation on nuclear non-proliferation and radiation protection.

Sources:

A.Q. Khan's Nuclear Wal-Mart: Out of Business or Under New Management?

<http://foreignaffairs.house.gov/110/36424.pdf>

Highlights of the ISIS Web Site

<http://www.isis-online.org/#highlights>

Roadmap to Responsible Export Controls: Learning from the Past

<http://www.exportcontrols.org>

NATO Advanced Research Workshop 'Energy and Environmental Challenges to Security'

<http://www.rec.org/natoworkshop/index.html>

The Union's Energy Policy: A European security challenge. Edit Herczog, member of the European Parliament

<http://www.rec.org/natoworkshop/downloads/session3/herzcog.ppt> (power point presentation)

Item 3. UNEP and South Korea to Help North Korea's Environmental Management

UNEP and the Republic of Korea agreed to set up a Trust Fund for projects addressing key environmental issues in the Democratic People's Republic of Korea. This first collaboration of the two countries on environmental matters aims to address urgent problems in the DPRK related to forest, water quality, air pollution, land degradation and biodiversity, as well as support eco-housing initiatives, conservation management, environmental education, clean development mechanisms and renewable energy technology, and environmental monitoring.

Military Implications:

Military personnel with environmental expertise should seek ways to support this initiative for North-South cooperation.

Source:

South Korea contributes more than US\$4 million to First Environmental Project between Two Koreas

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=521&ArticleID=5710&l=en>

Item 4. Climate Change Issues May Have Determined Australian Election

Environmental policy seems to have been one of the determining factors in Australia's election and the success of the Labor Party, which has environmental issues such as climate change and signing the Kyoto Protocol as top priorities. It is therefore expected that Australia will adopt more environmentally protective policies. Given its status as a major regional power, Australia's attitude could affect international and regional environmental deliberations.

Military Implications:

The military should assess how potential changes in Australia's environmental policies could affect its operations in the southwest Pacific region.

Sources:

His own boss. Economist.com, Nov 26th 2007

http://www.economist.com/daily/news/displaystory.cfm?story_id=10200246&fsrc=nwl

Australia ousts Bush ally, elects Labor Party

http://www.usatoday.com/news/world/2007-11-24-australia_N.htm

Item 5. UK to Establish an Independent Climate Committee

The parliament of the UK plans to establish an independent climate committee that would report to the parliament on an annual basis, said MP Elliot Morley, member of the UK Parliament and the Government's Special Representative on the Gleneagles Dialogue on Climate Change, Clean Energy and Sustainability, addressing NATO's Advanced research Workshop on "Energy and Environmental Challenges to Security."

During his first speech as the UK's Prime Minister, Gordon Brown stressed the importance of addressing climate change in a global framework and said, "As we move to a post 2012 global climate change agreement, we need a strengthened UN role for environmental protection."

Scientists and policymakers attending the UK Environment Agency annual conference called for increased efforts to address climate change effects. The Agency's chief executive, Lady Young, said that climate change needs to be addressed like "World War Three", noting that current adaptation measures are "too little, too slowly." UK Environment Secretary Hilary Benn warned that climate change "is not just an environmental challenge. It's also a security challenge, a migration challenge, a political challenge and an economic challenge as well."

Military Implications:

The UK's strong policy with regard to environmental security issues will undoubtedly expand more forcefully in the international arena and also have implications for US-UK military operations that could affect other national military operations and hence military-to-military cooperation.

Sources:

Climate change is like 'World War Three'

<http://www.telegraph.co.uk/earth/main.jhtml?xml=/earth/2007/11/05/eaclimate105.xml>

NATO Advanced Research Workshop 'Energy and Environmental Challenges to Security'

<http://www.rec.org/natoworkshop/index.html>

Gordon Brown, Lord Mayor's Banquet Speech, 12 November 2007

<http://www.number-10.gov.uk/output/Page13736.asp>

Item 6. Reducing Military Footprint with Solar Energy at 30 Cents per Watt

Current solar photovoltaic technology costs about \$3.00 per watt. Nanosolar Inc. has announced that it will lower costs to \$0.30 per watt, commercially available next month. The new production process makes the solar cell sheets 100 times thinner and 100 times faster with solar-absorbing nano-ink that can transfer sunlight into electrical power. [See also *Nano-based Solar Cell Material Offers Inexpensive Alternative* in July 2007 and other similar items in previous environmental security reports.]

Military Implications:

Military installation management, facility design, materiel development and procurement personnel should consider applications for lower cost solar energy, from building surfaces to mobile and remote energy requirements.

Sources:

Nanosolar: Power to the people

<http://www.enn.com/energy/article/24430>

Nanosolar Inc. <http://www.nanosolar.com/>

Nanosolar's Breakthrough - Solar Now Cheaper than Coal

<http://www.celsias.com/2007/11/23/nanosolars-breakthrough-technology-solar-now-cheaper-than-coal>

Item 7. Updates on Previously Identified Issues

7.1 OSCE Adopts Ministerial Declaration on Environment and Security

On November 30, the Organization for Security and Cooperation in Europe (OSCE) agreed on a Ministerial Declaration on Environment and Security. However, the OSCE failed to reach consensus on a detailed environmental security strategy. Nevertheless, Ambassador Bernard Snoy, Coordinator of OSCE Economic and Environmental Activities, is confident that the level of OSCE's commitment in the field of environmental security will increase, especially since countries east of Vienna stress their specific needs regarding these issues. [See also *OSCE Parliamentary Assembly Agrees to Advance Work on Environmental Security Strategy* in July 2007 and *OSCE to Develop an Environmental Security Strategy* in May 2007 environmental security reports.]

Military Implications:

Military personnel with environmental security responsibilities where OSCE operates should be notified of this declaration, since it should strengthen the organization's commitment to environmental matters and consequently influence field missions.

Source:

15th OSCE Ministerial Council, Madrid, 29 and 30 November 2007

http://www.osce.org/conferences/mc_2007.html

Madrid Declaration on Environment and Security

http://www.osce.org/documents/mcs/2007/11/28632_en.pdf

7.2 Negotiations Continue for an International Instrument to Ban Cluster Munitions

Cluster munitions were the focus of the Convention on Certain Conventional Weapons (CCW) meeting held in Geneva this month that resulted in a weak mandate with no legally binding document or language referring to cluster bomb prohibition or timeline. The EU's proposal to negotiate a treaty in 2008 banning cluster munitions was rejected. UN Secretary-General Ban Ki-moon underlined in his message to the delegates the necessity of a legally binding international instrument that would prohibit the use, development, stockpiling and transfer of cluster munitions; while promoting the destruction of current stockpiles, battlefield clearance and risk mitigation activities. This is consistent with the aim of the Oslo Process to negotiate a ban on cluster munitions. On November 5, the Global Day of Action to Ban Cluster Bombs, public actions took place in 40 countries, calling on governments to take actions for banning cluster munitions. Supporters hope that momentum was created to advance the negotiations next month, when more than 100 countries will gather in Vienna to discuss a draft treaty. [See also *Progress Made on Banning Cluster Bombs* in March 2007 and other items on this theme in previous environmental security reports.]

Military Implications:

[Same as previous in this issue] The military should be prepared for possible requirements to phase out cluster munitions use and to intensify efforts for helping other countries and regions do the same and/or deal with their aftereffects.

Sources:

Press Release: No hope for cluster bomb ban in Geneva but momentum grows for Vienna treaty talks

<http://www.stopclustermunitions.org/news.asp?id=102>

Ban cluster bombs: Red Cross, Mines Action Canada

<http://www.cbc.ca/world/story/2007/11/05/cluster-bombs.html>

Secretary-General calls for treaty banning cluster munitions

<http://www.un.org/apps/news/story.asp?NewsID=24581&Cr=cluster&Cr1=munitions>

CMC media advisory: Vienna Conference

<http://www.stopclustermunitions.org/news.asp?id=103>

7.3 Middle East Biosecurity Assessed

Experts from more than 30 countries from the Middle East, Europe, and Asia addressed biosecurity-related issues in the Middle East and produced an initial assessment of the region's biological defense capabilities. The three-day 'Seminar for the Life Sciences and Policy Communities in the Gulf and Middle East and North Africa (MENA),' held November 12-14 in Abu Dhabi, was organized by the International Council for the Life Sciences in collaboration with the Environment Agency of Abu Dhabi. It examined biological risks and threats in the conditions of the region's growing biotechnology capabilities and its special security vulnerability. The issue was addressed in its whole complexity from possible causes, to necessary security measures, as well as preparedness in case of natural outbreak, accidental release of laboratory pathogens, or bioterrorism. Participants agreed that international collaboration and developing global standards and codes of conduct are essential in order to address biological risks and threats. An experts' panel will continue working on Middle East biosecurity issues, and eventually a regional training center for specialists will be created. [See also *ETC Report Warns of the Threat of Synthetic Biology and Calls for Global Regulations* in January 2007 and other items in previous environmental security reports on this theme.]

Military Implications:

Military personnel with biosecurity responsibilities should receive these assessments and be asked to comment and suggest military-to-military collaboration potentials with special attention to standards and treaties to improve the security of biotech labs and applications.

Sources:

Biosafety and Biosecurity International 2007

<http://www.biosafetyandbiosecurity-2007.org/>

Biosafety and Biosecurity International Conference 2007 to be held in Abu Dhabi

<http://www.genengnews.com/news/bnitem.aspx?name=22646162&taxid=47>

Analysis: Biothreats in the Middle East

http://www.metimes.com/Security/2007/11/12/analysis_biothreats_in_the_middle_east/e4da/

7.4 Air Travel in the EU to Join the Carbon Emissions Trading System by 2011

The European Parliament voted to have EU internal and intercontinental flights join the bloc's carbon emissions trading system by 2011 and that the pollution cap be set at 90% of average emissions from the period 2004-2006. The bill will now be debated by member states. [See also *EU Advances the Inclusion of Airlines into the Emissions Trading System to 2010* in October 2007 and other items on the same issue in previous environmental security reports.]

Military Implications:

[Same as previous on this issue] It is not clear at this point if the proposed EU regulation concerns just commercial and private flights, or all. The military should explore impacts on its European operations and consult with allied military forces on the status of military exemptions.

Sources:

MEPs back cuts in air travel CO2 emissions

<http://euobserver.com/9/25134/?rk=1>

EU body adopts strict rules for airline emissions

<http://www.reuters.com/article/governmentFilingsNews/idUSL1365000020071113>

7.5 Depleted Uranium Environmental Concerns Resurfacing

Concerns over the environmental and health effects of the use of depleted uranium munitions are resurfacing and increasing worldwide. The debate ranges from extensive articles in the news to testimonials by scientists and health tests of military veterans and active duty personnel who may have been exposed to depleted uranium. A British study by the University of Leicester—using MC-ICP mass spectrometry for detecting an individual's exposure to depleted uranium—reveals that, depending on the rate of exposure, depleted uranium can be traced in urine 20 years after inhalation, even when the concentration was at the low end of the normal range. [See also *Conclusions on Health and Environmental Impact of 1990-1991 Gulf War* in July 2005 and other previous items on this theme, as well as *Sensitive Uranium Detector Using DNA* in February 2007 environmental security reports.]

Military Implications:

As discourse over the consequences of the use of depleted uranium continues, pressure could mount for new international regulations that would create a clear framework for assessment, consequences, and compensations/liabilities for the responsible countries. The military should

ensure that it is prepared to provide reliable information to counter such allegations and continue pursuing R&D for substitutes.

Sources:

"We Are Living Through Another Hiroshima," Iraq Doctor Says

http://www.opednews.com/articles/genera_sherwood_071121_22we_are_living_throu.htm

Attack on Iran would result in India feeling nuked: Moret

<http://www.dnaindia.com/report.asp?newsid=1080179>

Officials to test military for depleted uranium levels

http://www.qcsunonline.com/news/uranium_5331_article.html/department_test.html

Depleted uranium can be detected in urine

http://www.upi.com/NewsTrack/Health/2007/10/26/depleted_uranium_can_be_detected_in_urine_4838/

7.6 China's Emergency Response Law to Punish Falsifying Environmental Information

The Emergency Response Law, which came into effect in China on November 1st, has the objective of improving public security and reducing the environmental and health effects of natural disasters and industrial accidents. It requires government to provide accurate and timely information on public emergencies, and false reporting is banned and punishable. The law also says that in extremely serious emergency situations, which "severely threaten life and property, state security, public security, environmental security or public order (which are not specifically covered by the provisions in the law), the NPC Standing Committee or the State Council can declare a 'state of emergency' in accordance with the Constitution and relevant laws." [See also *China May Restructure Environmental Effort* in October 2007 and other related items in previous environmental security reports.]

Military Implications:

Environmental disasters (accidental or natural) could trigger large-scale socio-economic instability with possible serious security implications. Relevant military and diplomatic personnel should pre-establish protocols to increase cooperation with their Chinese counterparts on exchange of environmental information, particularly regarding such questions as: If non-Chinese military satellite photography of Chinese environmental conditions contradict public statements, should these images be released and address the spirit of the Emergency Response law? If so, how should they be released?

Source:

New law to ban falsifying information on accidents, disasters

<http://english.people.com.cn/90001/90776/6294422.html>

7.7 London Convention Might be Expanded to Include Ocean-based Geoengineering

Parties to the London Convention on dumping of wastes at sea unanimously decided that a more cautious approach is needed concerning ocean-based geoengineering, which is scientifically unjustified and should be internationally regulated. A coalition of civil society groups suggested that an international process should begin, "to put all geoengineering technologies under intergovernmental oversight." Thus, other international regulations—such as the UN Convention on Biological Diversity—might also be expanded. The Jeddah Declaration adopted on November 1st by the ninth global meeting of the Regional Seas Conventions and Action Plans also highlights the importance of a healthy marine environment to human security. [See also *Tougher Law of the*

Sea Regulations Suggested for Marine Genetic Resources in July 2007, The Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter Enters Into Force in March 2006, Accelerating Synthetic Biology Applications Need Better Monitoring and Regulation in July 2007 and other previous environmental security reports on similar issues.]

Military Implications:

The U.S. is Party to the 1972 London Convention and a signatory of the 1996 Protocol. It is reasonable to speculate that the discourse over ocean-based geoengineering might trigger new regulations or modifications of the existing ones to increase protection of the marine environment from human activities. It would be wise to keep track of these suggestions and apply the precautionary principle to show good stewardship and also to be prepared to comply with eventual new requirements.

Sources:

London Convention Puts Brakes on Ocean Geoengineering

http://www.etcgroup.org/en/materials/publications.html?pub_id=661

Civil Society groups call on London Convention to halt marine dumping geoengineering experiments

http://www.etcgroup.org/en/materials/publications.html?pub_id=660

Urea 'climate solution' may backfire

<http://abc.net.au/science/news/stories/2007/2085584.htm?tech> (article stored for a limited time on the website; full text in the [Appendix](#))

Global Forum Sets Out Program to Save Marine Environment

<http://www.arabnews.com/?page=1§ion=0&article=103055&d=1&m=11&y=2007&pix=kingdom.jpg&category=Kingdom>

7.8 Global Health Security Initiative Upgrades Its Strategic Policy Process

The eighth ministerial meeting of the Global Health Security Initiative reviewed the risks and threats of highest priority to global health security, such as chemical, biological, and radio-nuclear terrorism, and pandemic influenza and agreed on a strategy for addressing them. In that view, the group decided "to strengthen its role as a policy forum by identifying emerging issues and coordinating policy development processes to address chemical, biological and radio-nuclear threats" and to strengthen its network and communication capacities. The Global Health Security Initiative is an informal effort involving top health officials from Canada, France, Germany, Italy, Japan, Mexico, UK, U.S., and the E.U. [See also *Asian New Strategy to Improve Health and Environment* in August 2007, *Proposed Global Early Warning System for Monitoring Pandemics* in May 2007, and other related environmental security reports.]

Military Implications:

If not already done, relevant military personnel should consider collaboration with the Global Health Security Initiative to provide input on possible threats and assistance in building an effective response capacity, as well as help for nations to develop capacity to identify emerging threats and coordinate actions to address them. Emerging issue identification is an important element in the decision.

Source:

International Health Ministers Plan for Global Preparedness

<http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=November&x=20071107122140lcniellep3.269595e-02>

7.9 Climate Change

7.9.1 Number and Intensity of Natural Disasters is Rapidly Increasing

The number of weather-related disasters worldwide now averages 400–500 a year, compared to 125 in the early 1980s, and the world should increase mitigation and preparedness efforts, notes Oxfam report *Climate Alarm* *Disasters increase as climate change bites*. Geological disasters—such as earthquakes, are about the same, indicating that global warming is to blame, remarks the report. Factoring in population growth, the number of people affected also rises considerably. [See graphs in the [Appendix](#)] As of August 2007, some 248 million people were affected by flooding in 11 Asian countries alone. The November cyclone Sidr claimed another estimated 10,000 human lives and left about 3 million homeless in Bangladesh.

7.9.2 Melting Glaciers and Sea Ice

Rapid melting of Andes glaciers indicates that they might disappear by mid-century, threatening agriculture, drinking water sources, and hydroelectric plants. The livelihood of more than 11 million people living in growing cities of Bolivia, Ecuador, and Colombia is jeopardized. As some of the poorest countries of Latin America, they do not have the funds necessary for preparedness and for developing adequate infrastructure to cope with water scarcity and other related challenges.

7.9.3 Rising Sea Levels Impacts in the UK and Alaska

Rising sea levels, increasingly destructive and more frequent storms, erosion, and floods will cause some areas of Britain to sink into the sea over the next 30 years, warn some experts. It seems that some parts of the Norfolk and Suffolk coastline could not be saved, according to leaked findings of a study conducted by the UK Environment Agency and to be published in June 2008. A Department for Environment, Food and Rural Affairs spokesman said, “Spending on flood and coastal erosion risk management has nearly doubled in cash terms, from £307 million in 1996-97 to an estimated £600 million in 2007-08. The Government will further increase spending to £800 million in 2010-11.”

Erosion, flooding and permafrost thawing are also menacing some Alaskan areas and peoples' livelihood. On the island of Kivalina, uncertainty and frustration raise tension among the 400 residents whose relocation is yet to be decided.

7.9.4 Adaptation

The IPCC *Fourth Assessment Report (AR4) Summary for Policymakers* calls for swift action. This synthesis report is the final and most powerful of the series, dedicated to supporting policy negotiations and action. It states with “very high confidence” that post-industrial human activities have warming effects, and with “high confidence” that the impact of global warming may be “abrupt and irreversible”, but adequate adaptation and mitigation policies “can significantly reduce the risks of climate change.” It projects that in 2090-2099 relative to 1980-1999, temperature could rise between 0.3°C and 6.4°C, and sea level rise up to 0.59m—not including important factors such as changes in ice flow. The regions most affected by climate change are the Arctic, Africa, the small islands, and the highly populated Asian and African megadeltas. [See the [Appendix](#) for a more detailed description of the report.] The key findings will be discussed at the December UN Climate Change Conference in Bali. The previous three IPCC reports released this year are: *The Physical Science Basis; Impacts, Adaptation and Vulnerability*; and *Mitigation of Climate Change*.

Potential Food Crises Threatening Global Security—Change in cultivation patterns due to climate change, population growth, increasing oil prices, expansion of biofuels, instability of financial markets, and other economic factors dramatically affect agricultural commodity prices. According to the UN Food and Agriculture Organization (FAO) *Food Outlook* report, prices are rising considerably for nearly all major food and feed commodities. Another FAO report, *The State of Food and Agriculture 2007*, presents a comprehensive assessment of the world's food situation, including projections up to 2050. [See the [Appendix](#) for a more detailed description of the report.]

7.9.5 Post-Kyoto Negotiations

The IPCC *Fourth Assessment Report (AR4) Summary for Policymakers* [see item above] is a fundamental document for policymakers in preparation for the UN Climate Change Conference to be held in Bali, Indonesia, 3 -14 December 2007.

The "Singapore Declaration on Climate Change, Energy and the Environment" adopted at the East Asia Summit attended by leaders of 16 Asian nations, including China and India, pledges action on climate change and declares support of the UN plan as the "core mechanism" for tackling global warming, and commits to support efforts to negotiate an effective post-2012 international arrangement under the United Nations Framework Convention on Climate Change (UNFCCC) process. The same position emerged from the Asia Southeast Asian Nations – European Union (ASEAN-EU) United Summit, where delegates acknowledged that "developing countries should also play their part [in GHG emissions reduction], supported by developed countries through positive incentives, including through a strengthened global carbon market."

Government representatives attending the Alliance of Small Island States (AOSIS) discussed collaboration on coping with the devastating effects that climate change has on their nations, and on advancing the international negotiations for a comprehensive post-Kyoto Treaty during 'The Human Dimension of Global Climate Change' conference with the theme 'Recognizing environmental security as a fundamental human right'. The Maldives President, Maumoon Abdul Gayoom, reiterated the importance of recognizing "environmental protection as a fundamental human right" and announced that the Maldives will initiate a debate on the issue with the Human Rights Council.

Military Implications:

[Same as previous on similar issues] Increasingly more compelling evidence and warnings on climate change amplify international discourse and increase the emergence of international policies trying to tackle the causes and develop strategies to both mitigate and adapt to climate change. Hence, the military should be doing its part in reducing greenhouse gas emissions and preparing to help mitigate and adapt to the human-made and natural catastrophes that could ensue.

Sources: (see a more expanded list in the [Appendix](#))

Climate Alarm Disasters increase as climate change bites

http://www.oxfam.org/en/files/bp108_climate_change_alarm_0711.pdf/download

Yet another calamity. Economist.com, Nov 19th 2007, DELHI

http://www.economist.com/daily/news/displaystory.cfm?story_id=10163828&top_story=1

Andes water supply in peril, scientists say

<http://www.baltimoresun.com/news/world/bal-te.andeswater25nov25,0,4424633.full.story>

Coast villages to be sacrificed to the sea

<http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/11/11/nflood111.xml>

An Alaskan island is losing ground

<http://www.latimes.com/news/nationworld/nation/la-sci-kivalina25nov25,0,4146460.full.story>

IPCC Fourth Assessment Report (AR4) Summary for Policymakers

http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

Singapore Declaration on Climate Change, Energy and the Environment

<http://www.aseansec.org/21116.htm>

Joint Declaration of the ASEAN-EU Commemorative Summit, Singapore, 22 November 2007

<http://www.aseansec.org/21120.htm>

The President grants an interview to BBC Radio's World Today programme, on the human dimension of global climate change

http://www.presidencymaldives.gov.mv/pages/eng_news.php?news:4419:1

Radio Interview with Maldives President, Maumoon Abdul Gayoom:

<http://www.presidencymaldives.gov.mv/videos/20071114-01-128kbps.wma> (Windows Media Player)

Climate change conference opens in Maldives

http://news.xinhuanet.com/english/2007-11/14/content_7068743.htm

7.10 New UN Office Using Space Technology to Assist Mitigation of Disasters

A new UN Outer Space Affairs office (UNOOSA) has opened in Bonn, Germany, as part of a future network dedicated to carrying out the UN Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER). Providing universal access to space-based information to all countries and relevant organizations, UN-SPIDER covers all stages of disaster, including risk reduction. The program will improve disaster management and help developing countries strengthen their institutional capacities. UN-SPIDER offices are also scheduled to open in Beijing and Geneva. [See also *Space Technology for Improving Planetary Knowledge and Security* in April 2006, and other related items in previous environmental security reports.]

Military Implications:

Developing an integrated environmental monitoring capability to provide informed and timely data will considerably improve early warning, disaster management and response capability, and could help mitigate environmental and social consequences induced by natural disasters; and hence, improve environmental security. If not already in process, the military should develop cooperation protocols with UN-SPIDER.

Source:

UN Office Uses Space Info To Mitigate Disasters

<http://www.scoop.co.nz/stories/WO0711/S00016.htm>

New UN office utilizing space information to mitigate disasters opens in Bonn

<http://www.un.org/apps/news/story.asp?NewsID=24485&Cr=outer&Cr1=space>

7.11 Nanotechnology Safety Issues

Some noteworthy nanotechnology safety activities from November 2007 (more detailed descriptions of each are available in the [Appendix](#)) are:

New Technique Developed for Nanotube Study: a new method of studying the effects of carbon nanotubes on living cells by visualizing the entry and migration of nanotubes into and within cells. This will help nanotech environmental and health safety research.

Nanotechnology large risks with tiny particles report by KemI, Sweden's chemical regulators, makes concrete recommendation to the Swedish Government for research addressing health and environmental risks of nanomaterials.

The U.S. Agency for Toxic Substances and Disease Registry produces "toxicological profiles" from a priority list of 275 hazardous substances (including nanomaterials) found at National Priorities List sites. These hazardous substances are ranked based on frequency of occurrence at NPL sites, toxicity, and potential for human exposure. Interested parties can monitor the profile list for the latest information at <http://www.atsdr.cdc.gov/toxpro2.html>.

A U.S. national survey on the potential impacts of nanotechnology reveals that nanoscientists are significantly more concerned than the general public about the environmental and health impacts of nanotechnology.

The challenge of regulating nanomaterials is a well-documented article published in the *Environmental Science and Technology* journal, offering an excellent overview of the nanotechnology-related risks and regulations picture.

EuroNanOSH, the first European Conference focusing on occupational safety and health from the viewpoint of nanotechnology and engineered nanoparticles in workplaces, will be held in Helsinki 3-5 December 2007.

Nanotechnology for Security and Crime Prevention III conference, organized by the Institute of Nanotechnology, will be held January 17, 2008, at The Royal Society, London.

Military Implications:

Military personnel concerned with nanotech issues should contribute to and learn from these activities.

Sources: (a more detailed list in the [Appendix](#))

First Direct Images of Carbon Nanotubes Entering Cells

<http://www.physorg.com/news114348754.html>

Nanotechnology large risks with tiny particles

http://www.kemi.se/upload/Trycksaker/Pdf/Rapporter/Rapport6_07_Nanoteknik.pdf (Swedish, but with English Summary)

Proposed Substances To Be Evaluated for Set 22 Toxicological Profiles. Federal Register / Vol. 72, No. 206 / Thursday, October 25, 2007 / Notices <http://nanotech.lawbc.com/00021802.PDF>

Scientists worry about some risks more than the public

<http://www.nature.com/nano/journal/vaop/ncurrent/abs/nano.2007.392.html>

EuroNanOSH Conference

<http://www.ttl.fi/Internet/English/Information/International+meetings+and+symposia/EuroNanOsh>

Nanotechnology for Security and Crime Prevention III conference

<http://www.nano.org.uk/events/ionevents.htm#security>

Item 8. Reports Suggested for Review

8.1 The Link between Climate Change and Conflict

Several reports published this month highlight the impact climate change could have on security:

Human Development Report 2007-08. Fighting climate change: Human solidarity in a divided world. The 2007-08 edition of UNDP's Human Development Report focuses on the threat of climate change. Climate change, according to the report, is the 'defining human development

challenge of the 21st Century’ and the world must take actions today to avoid catastrophic consequences. For example, by 2080 an additional 600 million people in sub-Saharan Africa could suffer from malnutrition due to climate change, and a 3–4°C increase in global temperature could result in 330 million people being permanently or temporarily displaced through flooding. Pointing to the fact that the poorest are most vulnerable and suffer the earliest and most damaging setbacks, the report warns that actions taken—or not taken—in the years ahead will have a profound bearing on the future course of human development.

A Climate of Conflict by the London-based International Alert conflict resolution group analyzes the possible link between climate change and conflict. The report warns that unless adequate and timely adaptation policies are implemented, more than half of the world's nations are at risk. It identifies 46 countries—home to 2.7 billion people—at high risk of armed conflict, while another 56 states—with a total population of 1.2 billion—are at risk of political instability. [See map in the [Appendix](#)] Fragile states have particular vulnerability; therefore, reconstruction policies should include environmental and climate change adaptability strategies, underlines Dan Smith, Secretary General of International Alert.

The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change, by the Center for Strategic and International Studies and the Center for a New American Security presents the possible security implications of climate change through three plausible scenarios: two scenarios to 2040, and one to 2100. [See a more detailed description in the [Appendix](#)] The report includes a Summary of key environmental and national security implications of the three scenarios, which “makes clear, climate change has the potential to be one of the greatest national security challenges that this or any other generation of policymakers is likely to confront.”

Military Implications:

These reports by authoritative organizations are excellent analyses of the link between environmental conditions and conflict, detailing causes, consequences, and suggesting actions. Relevant military personnel should consider reviewing the reports for eventual inputs to conflict prevention planning and should prepare for the potential security challenges triggered or exacerbated by climate change.

Sources:

UNDP *Human Development Report 2007/8*

<http://hdr.undp.org/en/reports/global/hdr2007-8/>

A Climate of Conflict

http://www.international-alert.org/climate_change.php

The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change

http://www.csis.org/component?option.com_csis_pubs/task.view/id,4154/type,1/

8.2 The Environmental Dimension of Asian Security

The Environmental Dimension of Asian Security. Conflict and Cooperation over Energy, Resources, and Pollution “analyzes the nexus between environmental and natural resources (ENR) problems and security in Northeast Asia” says a book review. The book argues that in the region “there is very little regional cooperation, despite the need to manage disputes over energy, natural resources, and pervasive pollution.”

Military Implications:

Military personnel involved with Northeast Asia, should consider reviewing this book for insights into environmental security issues and solutions in that strategically key region.

Source:

The Environmental Dimension of Asian Security. Conflict and Cooperation over Energy, Resources, and Pollution. By In-Taek Hyun and Miranda Schreurs. USIP Press Books
<http://bookstore.usip.org/books/BookDetail.aspx?productID=134288>

APPENDIX

Reference Details

This Appendix contains expanded background information on some items.

Item 7. Updates on Previously Identified Issues

7.7 London Convention Might be Expanded to Include Ocean-based Geoengineering

Urea 'climate solution' may backfire

Friday, 9 November 2007 Anna Salleh

<http://www.abc.net.au/science/news/stories/2007/2085584.htm?tech>

Plans by an Australian company to sink hundreds of tonnes of urea into the ocean to combat climate change may backfire and exacerbate global warming, critics say.

Sydney-based company Ocean Nourishment Corporation (ONC) is looking at using nitrogen-rich urea to boost the growth of CO₂-absorbing phytoplankton.

The idea, says the company, is for this form of carbon sequestration to lock up carbon in the oceans for thousands of years.

It says that encouraging the growth of more phytoplankton could also boost fish stocks.

But a number of scientists and civil society groups are worried about the lack of independent oversight of such private exploration of 'ocean fertilisation', which they say could trigger environmental problems rather than solve them.

ONC plans to develop this method of carbon sequestration to generate valuable carbon credits.

And it's using the research of Adjunct Professor Ian Jones at the University of Sydney's civil engineering department to do so.

Jones has conducted laboratory experiments to show that nitrogen is important in boosting the growth of phytoplankton in ocean samples.

ONC has taken the research out of the lab. It has just completed an experiment involving 1 tonne of nitrogen in the Sulu Sea off the Philippines, says managing director John Ridley.

The company is now discussing with the Philippines government plans to scale up the experiment to 1000 tonnes of nitrogen over the next year.

Ridley says the company is also talking to the Moroccan government about similar experiments in the Atlantic Ocean. Concerns

But scientists involved in publicly-funded basic research into the role of nutrients including iron in the oceans are worried about the commercial imperative behind the latest experiments.

"This latest development in the Sulu Sea has all of our community concerned, as there doesn't appear to be any published evidence of how urea fertilisation impacts ocean biology and ecology," says biogeochemist Dr Philip Boyd of New Zealand's National Institute of Water and Atmospheric Research, or NIWA.

Dr Cliff Law of NIWA and others say independent scientific experts should oversee research by a growing number of private companies developing ocean fertilisation.

"At the end of the day we're dealing with companies that want to make money out of carbon credits," he says. ONC says there is little publicly available material on the field experiments, partly because of the need to protect intellectual property.

It says the experiments are mimicking natural upwelling of nutrients that occur in productive ocean areas.

In a commercial plant this would involve using urea produced from natural gas to sequester 10 megatonnes of CO₂ per year.

It also says each of its plants could provide 50 grams of marine protein per day for 38 million people.

Others say such moves could bring bad news as well as good.

Law says natural upwelling of nutrients can trigger toxic algal blooms and the release of nitrous oxide, a more powerful greenhouse gas than CO₂.

Ridley says the company will use ships to monitor phytoplankton growth and concentrations of nitrogen will not be allowed to go high enough to cause algal blooms.

"If we step the scale of this up we can actually track it by satellite," he says.

Law is not impressed.

"That all sounds very neat," he says. "If only it was so easy."

Law says boosting phytoplankton for fish stocks will also keep carbon circulating in the ecosystem, which would therefore undermine any sequestration efforts.

In addition, he says one of the challenges to long-term sequestration is drawing the dead phytoplankton down deep into the ocean.

Law says experiments seeding the ocean with iron have shown hardly any plankton sink below 100 metres, which means any carbon in them would be re-released within months.

Even if the plankton appear to sink, he says currents can bring them up again quite quickly.

Law says verifying long-term ocean carbon sequestration is difficult and expensive and he wonders how ONC will do this. London meeting discusses issue

An international scientific group on ocean dumping, known as the London Convention, is understood to be discussing urea ocean fertilisation at a meeting in the UK this week.

Earlier this week a coalition of civil society groups urged the convention to stop urea experiments until their impacts had been properly assessed.

Earlier this year the convention cautioned against ocean fertilisation using iron.

Ridley of ONC says the convention only has jurisdiction over experiments carried out in the high seas.

Instead, he says ONC will focus on territorial waters so it can be involved in carbon credit schemes.

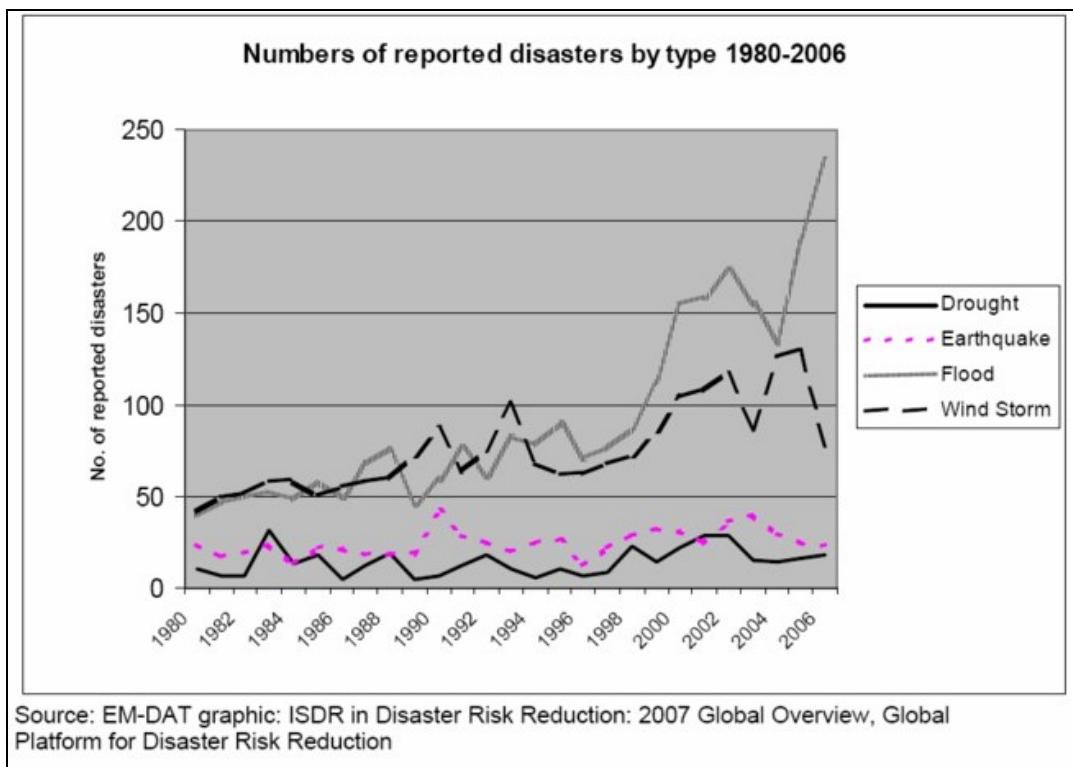
The Intergovernmental Panel on Climate Change has labelled ocean fertilisation as a hypothetical solution to climate change, carrying unknown side-effects and economic costs.

7.9 Climate Change

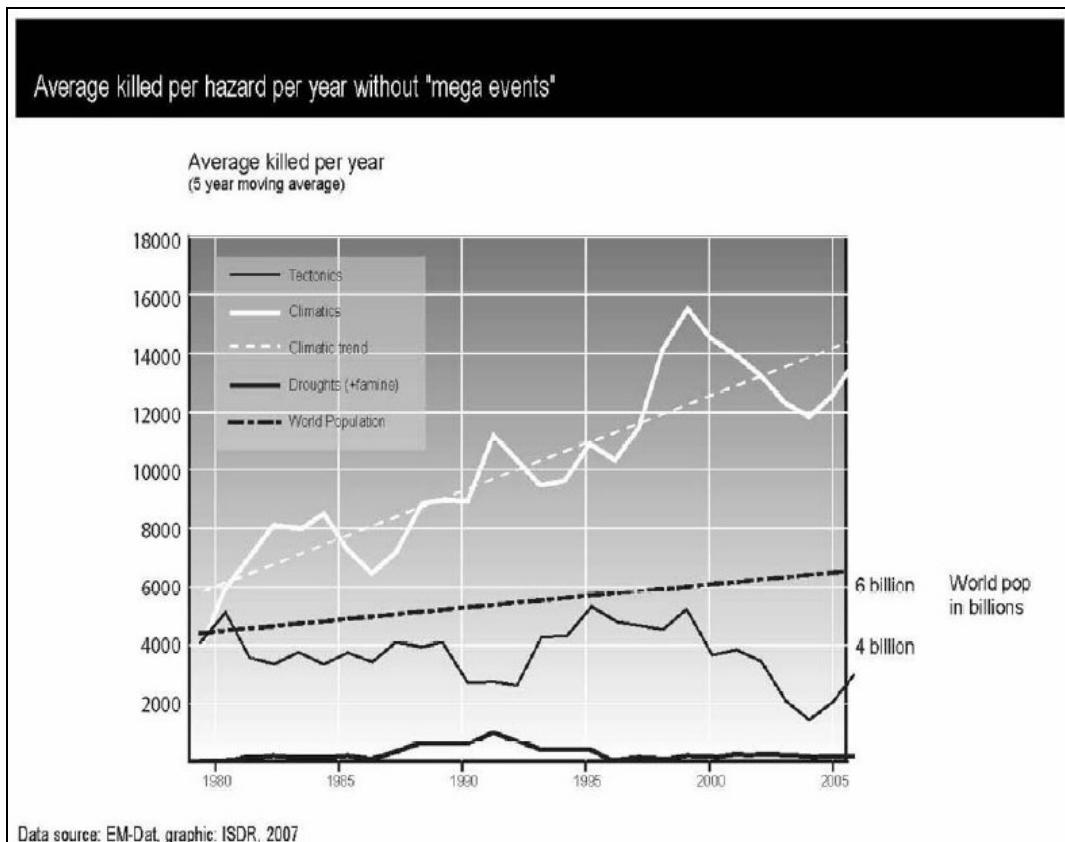
7.9.1 Intensified Disasters

Oxfam report *Climate Alarm* *Disasters increase as climate change bites:*

The number of weather-related disasters worldwide now averages 400–500 a year, compared to 125 in the early 1980s, mainly due to weather-related disasters—particularly floods and storms. Factoring in population increase, the number of people affected also rises considerably. In 2007, as of August, some 248 million people were affected by flooding in 11 Asian countries alone.



Source: *Climate Alarm*. Oxfam, 2007 http://www.oxfam.org/en/files/bp108_climate_change_alarm_0711.pdf/download



Source: *Climate Alarm*. Oxfam, 2007 http://www.oxfam.org/en/files/bp108_climate_change_alarm_0711.pdf/download

Disasters escalating four-fold as climate change hits poor hardest, says Oxfam
http://www.oxfam.org/en/news/2007/pr071125_climate_change_hits_poor_hardest
SUGGEST DELETE - DUPLICATES GRAPH SOURCE LINK--> Climate Alarm Disasters increase as climate change bites
http://www.oxfam.org/en/files/bp108_climate_change_alarm_0711.pdf/download

7.9.4 Adaptation

IPCC Fourth Assessment Report—Summary for Policymakers

The *Fourth Assessment Report (AR4) Summary for Policymakers* by the International Panel for Climate Change is a comprehensive scientific assessment of world climate, dedicated to support and encourage policy negotiations and action. It states with “very high confidence” that post-industrial human activities have warming effects, and with “high confidence” that although the impact of global warming may be “abrupt and irreversible”, adequate adaptation and mitigation policies “can significantly reduce the risks of climate change.” It projects that in 2090-2099 relative to 1980-1999, temperature rise could range between 0.3°C and 6.4°C, and sea level rise up to 0.59m—not including important factors such as changes in ice flow. The regions most affected by climate change are the Arctic, Africa, the small islands, and the highly populated Asian and African megadeltas.

The Synthesis Report addresses: 1. Observed changes in climate and their effects (highlighting observations of increases in global temperatures, melting of snow and ice, rising sea level, and health implications); 2. Causes of change (the likely role of anthropogenic warming); 3. Projected climate change and its impacts (different near and long term scenarios depending on climate policies, and examples of some impacts on systems, sectors, and regions) 4. Adaptation and mitigation options (with examples for several sectors of adaptation option/strategy, policies and measures, technologies, constraints and opportunities); and 5. Long-term perspective (key vulnerabilities, risks and threats, as well as scientific and socio-economic aspects relevant to adaptation and mitigation).

The report underlines that “A wide variety of policies and instruments are available to governments to create the incentives for mitigation action. Their applicability depends on national circumstances and sectoral context.” The AR4 was released in Valencia, Spain, on November 17, 2007 and the key findings will be discussed at the December UN Climate Change Conference in Bali.

FAO Food Security-related reports

Change in cultivation patterns due to climate change, population growth, increasing oil prices, expansion of biofuels, instability of financial markets, and other economic factors highly affect agricultural commodity prices. Large price fluctuations of agricultural products can have a destabilizing effect on countries’ economies, hindering poverty reduction efforts, potentially even leading to civil rebellion and political instability. The IPCC estimates that in some African countries, yields from rain-fed agriculture would be reduced by 50% due to climate change.

According to the UN Food and Agriculture Organization (FAO) *Food Outlook* report, prices are rising considerably for nearly all major food and feed commodities. Another FAO report, *The*

State of Food and Agriculture 2007, presents a comprehensive assessment of the world's food situation, including projections up to 2050. 'Part II - World and Regional Review: a longer term perspective' highlights the challenges posed to food security by population growth, rapid economic development, increasing demand for biofuels, and climate change. However, FAO's projections are optimistic, estimating the number of well-nourished people in developing countries to rise from 3.9 billion in 1999–2001 (83% of the population) to 6.2 billion (93%) in 2030, and to 7.2 billion (96%) by 2050.

Comment: Considering the high policy relevance of these reports, they will most likely trigger new international regulations and action recommendations for curbing climate change and mitigating its effects. The military should be prepared to support such policies as part of its general security defense responsibility, and comply with eventual new restrictions.

Sources for the Climate Change item: (a more expanded list)

Disasters escalating four-fold as climate change hits poor hardest, says Oxfam

http://www.oxfam.org/en/news/2007/pr071125_climate_change_hits_poor_hardest

Climate Alarm Disasters increase as climate change bites

http://www.oxfam.org/en/files/bp108_climate_change_alarm_0711.pdf/download

Powerful Cyclone Claims 3,200 Lives in Bangladesh

<http://www.ens-newswire.com/ens/nov2007/2007-11-19-03.asp>

Yet another calamity. Economist.com, Nov 19th 2007, DELHI

http://www.economist.com/daily/news/displaystory.cfm?story_id=10163828&top_story=1

Andes water supply in peril, scientists say

<http://www.baltimoresun.com/news/world/bal-te.andeswater25nov25,0,4424633.full.story>

Coast villages to be sacrificed to the sea

<http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/11/11/nflood111.xml>

An Alaskan island is losing ground

<http://www.latimes.com/news/nationworld/nation/la-sci-kivalina25nov25,0,4146460.full.story>

IPCC Fourth Assessment Report (AR4) Summary for Policymakers

http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

UNEP and WMO Panel Puts Final Full Stop Behind Risks and Rewards of Combating Climate Change

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=521&ArticleID=5707&l=en>

Climate Change 2007: The Physical Science Basis (PDF)

http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/02_02_07_climatereport.pdf

FAO publishes The State of Food and Agriculture 2007

<http://www.fao.org/newsroom/en/news/2007/1000698/index.html>

Global food crisis looms as climate change and fuel shortages bite

<http://www.guardian.co.uk/environment/2007/nov/03/food.climatechange>

FAO forecasts continued high cereal prices

<http://www.fao.org/newsroom/en/news/2007/1000697/index.html>

Mr Pachauri's presentation at the IPCC Press Conference

<http://www.ipcc.ch/pdf/presentations/valecia-2007-11/pachauri-17-november-2007.pdf>

Singapore Declaration on Climate Change, Energy and the Environment

<http://www.aseansec.org/21116.htm>

Asia signs 'green region' environment pact

<http://www.forbes.com/markets/feeds/afx/2007/11/21/afx4362934.html>

Joint Declaration of the ASEAN-EU Commemorative Summit, Singapore, 22 November 2007

<http://www.aseansec.org/21120.htm>

The President grants an interview to BBC Radio's World Today programme, on the human dimension of global climate change

http://www.presidencymaldives.gov.mv/pages/eng_news.php?news:4419:1

Radio Interview with Maldives President, Maumoon Abdul Gayoom:

<http://www.presidencymaldives.gov.mv/videos/20071114-01-128kbps.wma> (Windows Media Player)

Climate change conference opens in Maldives

http://news.xinhuanet.com/english/2007-11/14/content_7068743.htm

President Gayoom calls on the international community to grant universal recognition to the fact that environmental protection, preservation and security are part of an individual's basic human rights.

http://www.presidencymaldives.gov.mv/pages/eng_news.php?news:4417:1

7.11 Nanotechnology Safety Issues

More details on the nanotechnology safety-related items:

New Technique Developed for Nanotube Study

Scientists at Cambridge Univ. and the Daresbury Laboratory have developed a new method of studying the effects of carbon nanotubes on living cells. Alexandra Porter, a lead scientist at Cambridge, has explained that, by using transmission electron microscopy (TEM) and confocal microscopy, the entry and migration of nanotubes into and within cells can be visualized. First results, published in the October 28 online edition of *Nature Nanotechnology*, showed that cell death caused by certain nanotubes depended on the dose and exposure time and suggest that the toxicity is linked to the movement of the tubes into the cytoplasm and nucleus of a cell. This might help to elucidate the relationship between the physics and chemistry of nanomaterials and their biological effects, and hence help nanotech EHS research.

Source: First Direct Images of Carbon Nanotubes Entering Cells

<http://www.physorg.com/news114348754.html>

Nanotechnology large risks with tiny particles

Nanotechnology large risks with tiny particles report by KemI, Sweden's chemical regulators, proposes that the Government: allocate special research funds to the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas) for research on health and environmental risks of nanomaterials; instruct the Swedish Chemicals Agency to: follow developments in the area and propose measures whenever justified, and to participate actively in the development of new or modified testing methods within the OECD cooperative framework; instruct the Swedish Chemicals Agency to produce a deeper analysis of the use of nanomaterials in chemical products and articles after consultation with the trade organizations concerned; instruct the governmental agencies concerned to review the need for complementing existing legislation;

arrange, in the context of Sweden's EU presidency in 2009, a workshop on how the health and environmental risks of nanotechnology should be dealt with by legislation.

Sources:

Nanotechnology - large risks with tiny particles?
http://www.kemi.se/templates/News_5077.aspx

Nanotechnology large risks with tiny particles
http://toolbox.donator.se/utskick/Process_Url.asp?UrlId=51322&UID=202469&MID=1946>
http://www.kemi.se/upload/Trycksaker/Pdf/Rapporter/Rapport6_07_Nanoteknik.pdf (Swedish with English summary)

U.S. Agency for Toxic Substances and Disease Registry list of proposed substances

The U.S. Agency for Toxic Substances and Disease Registry (ATSDR) (part of the Department of Health and Human Services) has requested nominations from a list of proposed substances that it will evaluate for toxicological profile development. The list of proposed substances includes nanomaterials. The list of selected substances will be published late winter or early spring in the Federal Register. The added profiles will be publicly available in October 2008. Interested parties can monitor the profile list for the latest information at <http://www.atsdr.cdc.gov/toxpro2.html>.

Sources:

Proposed Substances To Be Evaluated for Set 22 Toxicological Profiles. Federal Register / Vol. 72, No. 206 / Thursday, October 25, 2007 / Notices <http://nanotech.lawbc.com/00021802.PDF>

U.S. national survey on the potential impacts of nanotechnology

A U.S. national survey on the potential impacts of nanotechnology reveals that while more optimistic about the possible benefits of nanotechnology, nanoscientists are significantly more concerned than the general public for some issues related to the environmental and health impacts of nanotechnology. They say that more research is needed to assess nanotech long-term implications. Only 15% to 20% of the public expressed concern related to nanotech risks, versus 20%-30% by nanoscientists. The study was published in *Nature Nanotechnology* (November 25.)

Sources:

Scientists worry about some risks more than the public

<http://www.nature.com/nano/journal/vaop/ncurrent/abs/nano.2007.392.html>

Nanotech's health, environment impacts worry scientists

<http://www.physorg.com/news115220058.html>

The challenge of regulating nanomaterials

The challenge of regulating nanomaterials is a well-documented article published in the Environmental Science and Technology journal, offering an excellent overview of the nanotechnology-related risks and regulations picture.

Source: The challenge of regulating nanomaterials

<http://pubs.acs.org/subscribe/journals/esthag-w/2007/nov/policy/rccnanoregs.html>

EuroNanOSH Conference on nanotechnology and engineered nanoparticles in workplaces

EuroNanOSH, the first European Conference focusing on occupational safety and health from the viewpoint of nanotechnology and engineered nanoparticles in workplaces, will be held in Helsinki 3-5 December 2007. According to the announcement, "The Conference will evaluate the current

safety situation of engineered nanoparticles in Europe and consider what actions are required in the near future. ... one of the main objectives of the Conference is to present the current understanding regarding the safety of engineered nanoparticles and to draw conclusions to protect workers both within and outside of Europe."

Source:

EuroNanOSH Conference

<http://www.ttl.fi/Internet/English/Information/International+meetings+and+symposia/EuroNanOsh>

The Bookstore of the Finnish Institute of Occupational Health at + 358 9 4747 2543 or kirjakauppa@ttl.fi should have information on any publications resulting from the Conference.

Nanotechnology for Security and Crime Prevention III conference

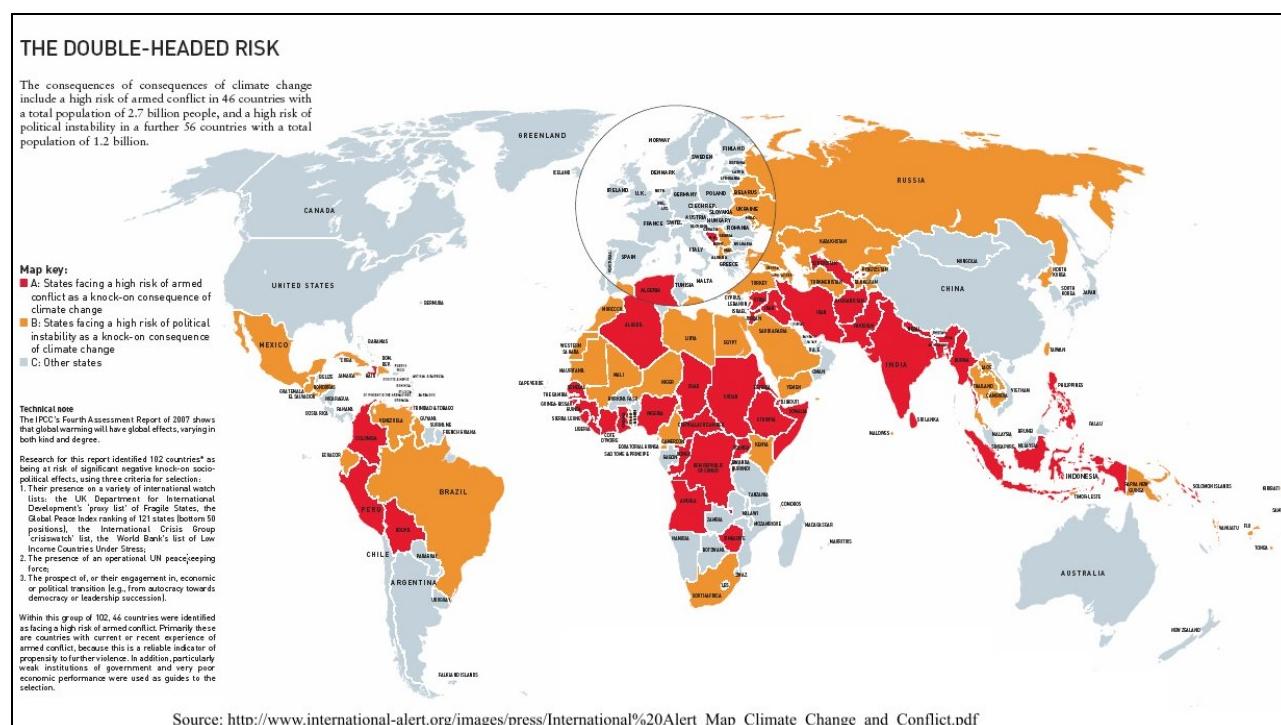
The Nanotechnology for Security and Crime Prevention III conference, organized by the Institute of Nanotechnology, will be held January 17, 2008, at The Royal Society, London. The conference will provide an update on the latest advances in nanotechnology with applications for security and fight against crime. Several papers on chemical detection will be presented.

Source: Nanotechnology for Security and Crime Prevention III conference

<http://www.nano.org.uk/events/ionevents.htm#security>

Item 8. Reports Suggested for Review

8.1 The Link between Climate Change and Conflict



Source: MAP © INTERNATIONAL ALERT; DESIGN: D.R. INK

http://www.international-alert.org/images/press/International%20Alert_Map_Climate_Change_and_Conflict.pdf

The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change

The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change, by the Center for Strategic and International Studies and the Center for a New American Security presents the possible security implications of climate change by three plausible scenarios:

- scenario 1: Expected Climate Change to 2040 (based on the medium IPCC projections, temperature rise 1.3°C above 1990 levels and sea level rise 0.23m);
- scenario 2: Severe Climate Change to 2040 (more severe warming at 2.6°C and 0.52m sea level rise has exponentially more devastating effects on agriculture, ecosystem and population, and water scarcity is affecting 2 billion people);
- scenario 3: Catastrophic Climate Change to 2100 (an expansion of Scenario 2 from 2040 to 2100, assuming average global temperature rises of 5.6°C above 1990 levels, mountain glaciers virtually gone, and sea level rise by 2 m relative to 1990, rendering low-lying coastal regions uninhabitable, and severely affecting all areas of life and ecosystems).

The report includes a Summary of key environmental and national security implications of the three scenarios, which “makes clear, climate change has the potential to be one of the greatest national security challenges that this or any other generation of policymakers is likely to confront.”
The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change

http://www.csis.org/component?option=com_csis_pubs/task,view/id,4154/type,1/

Climate change seen threatening national security

<http://uk.reuters.com/article/environmentNews/idUKN0528470920071106>